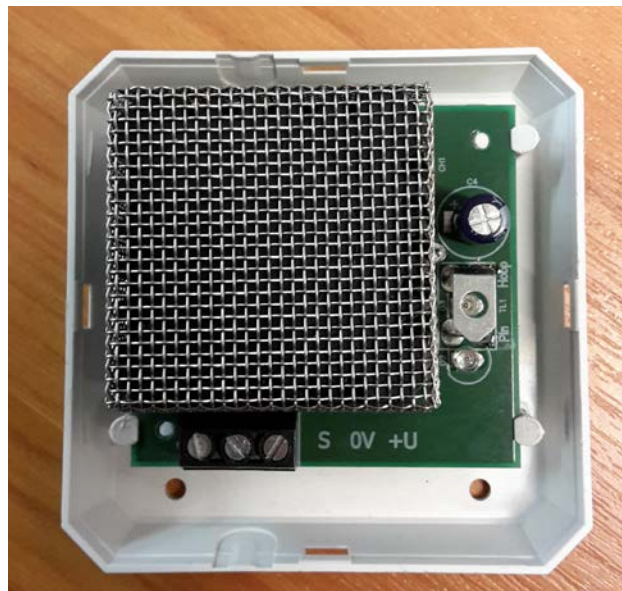


Smoke detector IIR-EFP (0-batch manual)

Ionic smoke detector for EFP system



Description

The ICAS IIR-EFP system detector is an external powered chlorine gas and smoke detector based on the ICAS ion chamber with a low activity of the source – 3kBq. It is intended for electrical distribution boards in combination with suitable control unit and breaker unit. The detector is fine-tuned to detect smoke at an early stage.

The ion smoke chamber reacts to open fire and invisible smoke and has hence a faster reaction to fast burning fire. The sensitivity of this model was optimized for use inside electrical cubicles to detect burning insulations or electric sparks.

It is used a digital signal processing of the chamber signal and an automatic sensitivity adjustment algorithm and compensation during the detector live. The ionic chamber is fitted by a metal net for an increasing of the immunity against disturbances and higher protection against insects entering. The signal from the chamber is filtered by the digital way in addition in order to improve immunity of the detector against false alarms more.

The model IIR-EFP can be powered from an external voltage source (contral unit) 9V DC .

ALARM is indicated by switch on of the open collector output (opto-coupler) to the level L and red LED is lighting at the same time. The opto-coupler open collector output is capable enough to control the relay in the EFP control unit..

Model IIR-EFP does not contents any buzzer as an special option like the other ICAS smoke alarms and detectors with regards to its estimated application. The new IIR-EFP model is equipped by ALARM memory which is activated after ALARM – (the full alarm is indicated only when smoke particles are present in the smoke chamber in an over-limit concentration).

There is one combined TEST push-buttons / LED indicator light projection lens on the top of the smoke alarm. The red and yellow LEDs are used for indications.

There are available tree terminals for power voltage, ground and output signal connection. The terminals are available after easy opening of the plastic housing. Terminals are marked.

The detector is easy to test by the TEST pushbutton. The same button serves for possible diagnostics mode start or alarm memory or detector reset.

The smoke alarm consist of a full covered detector board with ionic chamber and all electronics components. The terminals are marked.

Smoke detector indications table

Signal-colour	Signal-type	Status detector	Action / Comments
No Light	None	- Normal operation - Smoke tests every 12 sec.	
YELLOW	2 short blinks every 4 sec.	- Start up detector after power on - Start up after RESTART operation - Automatic restart after watchdog overflow	- Blinking until detector chamber is stabilized. Typical start up time period is about 130s.
	Flash every 4. sec.	- Chamber / Sensor faulty - Program Faulty (Check-sum error) - Event saved to memory - Fault counter increase +1.	- Do RESTART by the long pushbutton operation or power off/on sequence. If this is not working remove and change the detector. - If the ERROR reason is fixed the indication will be stopped automatically
	4 short blinks in intervals	- "Watch-Dog" control detects a stalled program. - The event being stored in memory - WD-counter increases with +1.	- "Watch-Dog" period is set to about 8sec. If program freeze, it will restart the detector automatically after 8s. - Remove power from detector for 1 min or do RESTART. If the program stalled again remove and change detector.
	One blink every 1. sec.	- Pre alarm. Smoke has been detected.	- After the first positive smoke detection, the smoke sampling increases from 4 to 1 sec, - It could have been an smoke /aerosol or an object in the chamber, which was taken as smoke. - 10 consequently positive smoke samples are necessary for the full ALARM
RED	Steady RED Led	- FIRE ALARM indication - Event is saved - Fire Alarm-counter increases +1	-The indication is active only during alarm smoke condition and for about 12s after decreasing of smoke concentration below the alarm limit - The ALARM indication can be suppressed by short pushbutton press for 10 minutes (detector gets into HUSH mode) - When reason for the ALARM is not found and there is no present smoke/aerosol, the detector can be RESTART by long press of the pushbutton (see button operations) in clean conditions. The new automatic sensitivity adjustment is accomplished after RESTART
	2 short blinks every 4s	- ALARM MEMORY indication	-The indication is active only after stop of full alarm indication when the alarm condition does not continue - The alarm memory can be reset by short pushbutton press
	One blink every 4. sec.	- Diagnostic mode - The diagnostic messages are senndng by the optical way by RED Led. - The first message after the DIAGNOSTIC mode start is the long message with detector history, the following messages includes the actual detector status.	- DIAGNOSTICS can be activated from NORMAL OPERATIONAL mode by such press of the pushbutton that RED and YELLOW light get lit and dark (longer that for test activation) or by press of the button during power on/RESTART operation - The diagnostics can be stopped by short push button press if the detector is in the DIAGNOSTICS mode. The diagnostics messages are sent in the DS-500 compatible format and can be received by a special optical DS-500 option - optical probe - which is connected directly to the USB port of the PC with relevant software (Detector Viewer).
RED and YELLOW	Continuous light of both Leds	- TEST mode indication - Test timer is running	-The TEST can be activated by a short press of the button from NORMAL OPERATIONAL mode- - Press the pushbutton shortly to stop TEST mode - If no button operation stops the test , the test will be stopped automatically after 1 minute. (The LEDs and the right detector output response are tested.)

Technical specification

Type:	IIR-EFP (system detector)	
Compliance:		
Detection:	Ionic chamber with a low activity of the source – 3kBq Digital signal processing and filtering	
Power supply:	9V DC external	
Average standby current:	< 30 uA,	
Alarm/Test current:	< 25 mA	
Output S	max. load 50 mA	
Testing:	Press push button shortly and release when red and yellow LEDs are lighting, check the right output response. Use aerosol test for the full detector test The monthly test period is recommended	
Indication:	Start up time	Yellow double flashes every 4s
	Normal condition	No LEDs indication High impedance on the open collector output S
	PREALARM	Yellow flashes every 1s
	ALARM	Red LED steady lighting Low voltage level on the output S (open collector output) (max. permitted current of the open collector is 50mA)
	MEMORY	Red LED double flashes with period 4s
	FAILURE	Yellow flashes every 4s
	TEST	Yellow and Red LED steady lighting, open collector output -low level
	DIAGNOSTICS	Red LED flashing every 4s
	Temperature:	-5°C to +50°C
	Humidity:	max, 95% RH without a condensation
Dimensions:	W = 70 mm, L= 70 mm, H = 36mm	

Installation

Open the detector by slightly press in the middle of all plastic cover walls.
 Fix the detector in the required position in the electrical cubicle by screws (use holes in the the plastic base)
 Do not install the detector in the immediate vicinity of potential sources of EM disturbances like power contacts, inductors etc., switching power supplies etc.)
 Connect the detector to the compatible control panel - EFP-CU2, EFP-CU3 according to the wiring diagram from the EFP-CU2 or EFP-CU3 manual. (0V, +9V and S signal to the relevant terminals of the control panel)
 Close the detector
 Set power on and wait for detector stabilization for about 130s
 If normal operation mode of the detector reached, do test of the system
 Reset system to the normal operational

Maintenance

The smoke detector can be triggered by dust, moisture and cooking vapour. The improved reliability is reached by introducing of the Automatic Test and Sensitivity control to keep the sensitivity at the correct level during the lifetime of the detector. The built in micro-controller is also used to communicate with the diagnostic system DS500 by optical way or as well as handling all internal chamber test and system diagnostics.
 It is recommended to test the smoke alarm monthly and keep it clean.
 Replace detector by the new one in case the failure indication occurs and detector reset does not stop it.
 It is recommended to replace the detector after about 6 years after installation.